Optimizing Energy Balance To Reduce the Cancer Burden

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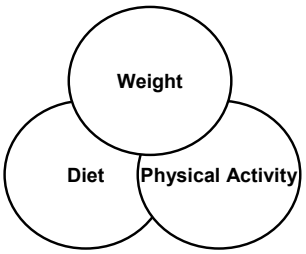
Energy Balance, Energetics and Cancer



NCI Energy Balance Initiative: Timeline

- **July 2002** - Director A. von Eschenbach calls for Energy Balance Initiative
- **2002/2003** - NCI Energy Balance Priority Working Group
- **Fall 2003** - Optimizing Energy Balance to Reduce the Cancer Burden included in 2005 Bypass Budget

Goals of the NCI Energy Balance Initiative

- Understand the causes of adverse patterns of weight, physical activity and diet
- Define their contribution to cancer
- Apply this knowledge to cancer prevention and control.

Specific Objectives of the Initiative

1. **Discover how body weight, physical activity, and diet, along with genetic and environmental factors, interact over a lifetime to influence the cancer process**
2. **Monitor trends in and determinants of diet, weight, and physical activity and their cancer-related consequences by expanding nationwide research and surveillance infrastructure**
3. **Develop improved measurement methods of body mass and composition, physical activity and fitness, diet, and bioactive food components through self-report measures and advances in technology for objective reference measures**
4. **Improve cancer-related health outcomes, especially in high risk populations, by accelerating research on energy balance-related behaviors and developing interventions**

Objective 1 Milestones

- Discover and characterize mechanisms leading to cancer by initiating transdisciplinary research centers in the areas of energetics, physical activity, nutrition, and genetics.
- Collect enhanced self-report and objective measures on diet and bioactive food components, body mass and composition, and physical activity and fitness through existing population-level studies.
- Advance understanding of cancer mechanisms by conducting studies in existing NIH clinical metabolic and nutrition research units.
- Document the influence of energy balance on the cancer process throughout life through the use of preclinical animal models.
- Study the impact of energy balance on cancer by initiating basic and clinical research via proteomic approaches and molecular technology.

Objective 2 Milestones

- Expand nationwide surveys to enhance self-report, biologic, and genetic measures for monitoring and examining the impact of behaviors related to energy balance and cancer with the NCHS.
- Advance knowledge about specific local populations by fostering community surveillance on individual behaviors and environmental factors, in collaboration with the CDC and NCHS.
- Evaluate public comprehension of health recommendations on physical activity and nutrition through national surveys.

Objective 2 Milestones

- Establish surveys of healthcare providers to evaluate knowledge, attitudes, and practice related to weight control in clinical practice.
- Develop a research resource on legislative policies related to nutrition, physical activity, and obesity.
- Initiate innovative research on economic factors related to diet, physical activity, and energy balance in at-risk populations.
- Develop an infrastructure to train future national and international scientific leaders in energy balance across the cancer continuum by supporting interdisciplinary training in basic through population sciences.

Objective 3 Milestones

- Expand validation research of diet, physical activity, and fitness measurement through the use of reference biomarkers and physical measures of fitness within national and international cohort studies.
- Support research in collaboration with other NIH institutes in innovative technologies, such as electronic handheld monitoring devices and Internet surveys, in the assessment of diet, weight control, and physical activity behaviors.
- Improve the ability to capture information on diet, weight, and physical activity behaviors across diverse cultural populations.
- Develop surrogate (intermediate) biomarkers for use as predictors of the effectiveness of diet and physical activity interventions.

Objective 4 Milestones

- Support research on interventions that focus on weight control through diet and physical activity in cancer patients and in populations at high risk for cancer.
- Support research to understand how sociocultural factors influence adoption of recommended behaviors, and develop approaches to improve interventions in specific populations.
- Develop effective approaches to improving and targeting health messages in the areas of dietary guidance, physical activity recommendations, and food labeling by supporting health communication research.
- Support research within transdisciplinary research centers on innovative and cost-effective obesity prevention interventions, with broad population impact at the social-environmental or policy level for children and adults focusing on critical periods when weight gain is likely.

Objective 1:

Discover how body weight, physical activity, diet, along with genetic and environmental factors, interact over a lifetime to influence cancer process

- TREC RFA
- Basic Research on Energy Balance and Cancer: Animal Models
- NIH Clinical Center Interventions
- NCI Funded Epidemiologic Studies Explore Energy Balance & Cancer Risk
- Analyses of Energy Balance related Biomarkers in Population Studies

Objective 2:

Monitor trends in and determinants of diet, weight, and physical activity and their cancer-related consequences by expanding nationwide research and surveillance infrastructure

- Enhanced Surveillance of Energy Balance Related Health Behaviors:
  - National Health Interview Survey (NHIS)
  - California Health Interview Survey (CHIS)
- Physical Activity and the Built Environment
- Objective Measurement of Physical Activity and Enhanced Measures of “Usual” Dietary Intake:
  - National Health and Nutrition Examination Survey (NHANES)

Objective 3:

Improve measurement methods of body mass and composition, physical activity and fitness, diet, and bioactive food components through self-report measures and advances in technology for objective reference measures

- Observing Protein and Energy Nutrition (OPEN) Study and Follow-up (Open II)
- Improving Diet and Physical Activity Assessment (PAR-03-009)
  - **NCI led trans NIH initiative**
- Capturing Physical Activity and Diet in Real Time
- Bioengineering Approaches for Prevention and Treatment of Overweight and Obesity
  - **NHLBI led trans NIH initiative**

Objective 4:

Improve cancer-related health outcomes, especially in high risk populations, by accelerating research on energy balance-related behaviors and developing interventions

- Transdisciplinary Research on Energetics and Cancer (TREC)
- Policy research
- Workshops and other efforts to solicit interest within cancer related investigator-initiated research

The Challenge – The Opportunity